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10/597,928	04/07/2008	Hans Bornefalk	P32378 USA	7945

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EXAMINER
TANINGCO, ALEXANDER H

ART UNIT	PAPER NUMBER
2882	

NOTIFICATION DATE	DELIVERY MODE
08/18/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdocket@foxrothschild.com

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 August 2006*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 August 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☒ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *8/11/2006*.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Sweden on Feb. 13, 2004. It is noted, however, that applicant has not filed a certified copy of the 0400325-7 application as required by 35 U.S.C. 119(b).

Drawings

The drawings are objected to because in steps 903 and 905 of Fig. 9 "Sampel" should be replaced with 'Sample'. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required

corrective action in the next Office action. The objection to the drawings will not be held

in abeyance.

Claim Objections

Claim 9 is objected to under 37 CFR 1.75 as being a duplicate of claim 8. When

two claims in an application are duplicates or else are so close in content that they both

cover the same thing, despite a slight difference in wording. See MPEP § 706.03(k).

Dependent claims 12 and 16 are objected to by virtue of their dependency.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with

the enablement requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to enable one skilled in the art to which it

pertains, or with which it is most nearly connected, to make and/or use the invention.

With regards to dependent claim 3, the invention requires a "filter answer". The

specification as originally filed fails to describe 'a filter answer'. Therefore, the

specification as originally filled fails to describe or disclose a teaching on how to perform

a 'filter answer'. Consequently, the specification fails to enable one of ordinary skill in the art to make and/or use the invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10, 12, 13, and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 contains the phrase "using" without defining what is encompassed by 'using' is in narrative form.

Claim 13, line 1, "the applied sampling grid" lacks proper antecedent basis.

Dependent claims 12 and 16 are rejected by virtue of their dependency.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-7, 11-13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulet-Parada et al. (US 2004/0047498) in view of Ito et al. (US 5,224,036).

With regards to claim 1, Mulet-Parada et al. discloses a method comprising the steps of: extracting phase information from the image data [para 0012-0016]. Mulet-Parada et al. fails to teach differentiating between different lines and edges, and skewing said lines towards a centre.

Ito et al. teaches differentiating between different lines and edges (Col. 2 Lines 35-37, Col. 3 Lines 35-44, and Col. 7 Line 11 – Col. 8 Line 31), and skewing said lines towards a centre (Col. 3 Lines 55-65). It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the invention of Mulet-Parada et al. to include the features of Ito et al., since one would have been motivated to make such a modification to improve imaging as taught by Ito et al. (Col. 7 Line 11 – Col. 8 Line 31).

With regards to claim 2, Mulet-Parada et al. as modified above discloses wherein said step a. comprises extracting an orientation estimate [para 0045].

With regards to claim 3, Mulet-Parada et al. as modified above discloses wherein said step b. comprises additional information on a magnitude from a filter answer [para 0037].

With regards to claim 4, Mulet-Parada et al. as modified above discloses wherein said region of interest is stellate lesions and said image data is a digitalized mammogram (Col. 2 Lines 40-65 Ito et al.).

With regards to claim 5, Mulet-Parada et al. as modified above discloses a. obtaining an image data corresponding to said mammogram (Col. 2 Lines 39-45 Ito et al.); b. obtaining an image mask (Col. 2 Lines 18-55 Ito et al.); c. substantially uniformly sampling the digital image inside said mask and producing sample points (Col. 3 Lines

5-52 Ito et al.); d. calculating for each sample point a characteristic (Col. 3 Lines 15-20

Ito et al.); e. selecting a number of sampling points most likely to correspond to a

spiculated lesion (Col. 3 Lines 15-20 Ito et al.); f. applying a segmentation procedure to

the original digital image at said selected sampling points (Col. 7 Lines 5-20 Ito et al.); g.

extracting new characteristics from each segmented area and obtaining a feature vector

(Col. 11 Lines 1-12 Ito et al.); h. classifying each feature vector as suspicious or non-

suspicious using a classification machine (Col. 11 Lines 1-12 Ito et al.); and i. examining

said suspicious areas (Abs. and Col. 11 Lines 1-12 Ito et al.).

With regards to claim 6, Mulet-Parada et al. as modified above discloses one or

several of: contrast, two measures of spiculatedness, and two measures of edge

orientations [para 0034].

With regards to claim 7, Mulet-Parada et al. as modified above discloses

wherein said contrast, is derived as a ratio between an intensity inside a circle with a

radius r1 and a washer shaped background area with inner radius r1 and an outer

radius r2 (Col. 7 Lines 20-65 Ito et al.).

With regards to claim 11, Mulet-Parada et al. as modified above discloses

wherein said classification of each feature vector is provided using a classification

machine (Col. 3 Lines 38-42 Ito et al.).

With regards to claims 12 and 16, Mulet-Parada et al. as modified above

discloses wherein the entire image is sampled [para 0006-0008].

With regards to claim 13, Mulet-Parada et al. as modified above discloses wherein each node in the applied sampling grid is evaluated in terms of contrast and speculation (Col. 3 Lines 5-45 Ito et al.).

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulet-Parada et al. (US 2004/0047498) and Ito et al. (US 5,224,036) as applied to claim 6 above, and further in view of Giger et al. (US 5,832,103).

With regards to claims 8 and 9, Mulet-Parada et al. as modified above discloses a method as recited above in claim 6. Mulet-Parada et al. as modified above fails to teach wherein spiculatedness are derived from a histogram of angle differences obtained using a filtration method that yields phase information together with orientation estimates.

Giger et al. teaches wherein spiculatedness are derived from a histogram of angle differences obtained using a filtration method that yields phase information together with orientation estimates (Col. 9 Lines 38-50). It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the invention of Mulet-Parada et al. to include the features of Giger et al., since one would have been motivated to make such a modification to improve imaging as taught by Giger et al. (Col. 1 Lines 15-27).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mulet-Parada et al. (US 2004/0047498) and Ito et al. (US 5,224,036) as applied to claim 5 above, and further in view of Giger et al. (US 5,832,103).

With regards to claim 10, Mulet-Parada et al. as modified above discloses a method as recited above in claim 5. Mulet-Parada et al. fails to teach a support vector machine or an artificial neural network.

Giger et al. teaches a support vector machine or an artificial neural network (Col. 2 Lines 20-25). It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the invention of Mulet-Parada et al. to include the features of Giger et al., since one would have been motivated to make such a modification to improve imaging as taught by Giger et al. (Col. 1 Lines 15-27).

Claims 14, 15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulet-Parada et al. (US 2004/0047498) in view of Giger et al. (US 5,832,103).

With regards to claims 14 and 17, Mulet-Parada et al. discloses an rrangement comprising: a processing unit [para 0019], a storage unit [para 0009],a module for obtaining image masks [para 0012], a sampling module [para 0001], a calculating module [para 0039-0040 and 0063], filtration module [para 0012], a classification module [para 0006]. Mulet-Parada et al. fails to teach a support vector machine and/or artificial neural network module.

Giger et al. teaches a support vector machine or an artificial neural network (Col. 2 Lines 20-25). It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the invention of Mulet-Parada et al. to include the features of Giger et al., since one would have been motivated to make such a modification to improve imaging as taught by Giger et al. (Col. 1 Lines 15-27).

With regards to claim 15, Mulet-Parada et al. as modified above discloses wherein said filtration module is a set of quadrature-filter [para 0012].

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show:

Nishikawa et al. (US 5,666,434) shows a method for automated detection of abnormal anatomic regions, wherein a mammogram is digitized to produce a digital image and the digital image is processed using local edge gradient analysis and linear pattern analysis in addition to feature extraction routines to identify abnormal anatomic regions (Abs.).

Takeo et al. (US 5,732,121) shows prospective abnormal patterns in a radiation image of an object are detected in accordance with an image signal representing the radiation image. A probability density function of the image signal, which corresponds to a region, that is inward from a contour of each of the prospective abnormal patterns having been detected, and a neighboring region, is formed (Abs.).

Doi et al. (US 2003/0099387) shows obtaining at least one computed tomography medical image of a pulmonary nodule in determining if the pulmonary nodule is malignant based on the examination of seven patient or image features (Abs.).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER H. TANINGCO whose telephone number is (571)272-8048. The examiner can normally be reached on Mon-Fri 8:00-4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ALEXANDER H TANINGCO/
Examiner, Art Unit 2882